KEYNOTE SPEAKER

Genomics and Systems Biology and Emerging Technologies

INTENSIFICATION OF 2G BIOETHANOL PROCESS: YEAST DEVELOPMENT TO OVERCOME CHALLENGES DERIVED FROM LIGNOCELLULOSIC PROCESSING

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The astonishing growth of world population, the global climate changes and the depletion of fossil fuels are strong drivers for the development of a resource-efficient and sustainable economy. Lignocellulosic biomass valorization through the so-called biorefineries arises as one of the paths for such purpose. The main driver for the development of lignocellulosic biorefineries is sustainability, but to make these bioprocesses economically feasible, intensified and flexible processes, responsive to feedstock and market fluctuations, have to be considered. These lead to highly demanding operational conditions both for the cells and enzymes used in the process.
The development of robust yeast cell factories, through genetic and modern metabolic engineering tools, able to cope with the stress imposed by these processes is envisioned as a vital platform for converting the array of sugars released from biomass into biofuels and biochemicals. This seminar presents an overview of the second generation ethanol biorefineries challenges and how genetic engineering strategies can help surpass them. In this regard, examples of intensified and productive conditions attained by metabolic engineering strategies applied over robust industrial yeast chassis are given. The presented results attest the feasibility of intensifying biomass-to-ethanol processes and show how this integrated strategy has the potential to be the driver for the emergence of economical and sustainable processes for high-value chemicals' production from lignocellulosic biomass.

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